

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: WILLIAM G. WRIGHT SR. Examiner #: 02100 Date: 7/16/03
Art Unit: 1524 Phone Number 305-7792 Serial Number: 09480,711
Mail Box and Bldg/Room Location: 9B-9A15 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention:

Process for producing a lithium transition metal sulphide
Inventors (please provide full names): ANDREW RITCHIE PETER BOWLE

Earliest Priority Filing Date: 06/17/1999 UK 991404.0

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Claims and Spec. attached
USW SR. 7/16/03

STAFF USE ONLY

Searcher: EL
Searcher Phone #: _____
Searcher Location: _____
Date Searcher Picked Up: _____
Date Completed: 7-18-03
Searcher Prep & Review Time: _____
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Type of Search

NA Sequence (#) _____
AA Sequence (#) _____
Structure (#) (3)
Bibliographic (and)
Litigation _____
Fulltext _____
Patent Family _____
Other _____

Vendors and cost where applicable

STN \$177.36
Dialog _____
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Lexis/Nexis _____
Sequence Systems _____
WWW/Internet _____
Other (specify) _____

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FILE 'REGISTRY' ENTERED AT 09:50:31 ON 18 JUL 2003
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FILE 'REGISTRY' ENTERED AT 08:58:37 ON 18 JUL 2003
L1 11727 S (LI(L)S)/ELS
L2 36 S L1 (L) 2/ELC.SUB
L3 319 S L1 (L) (T1 OR T2 OR T3)/PG (L) 3/ELC.SUB
L4 1976 S (T1 OR T2 OR T3)/PG (L) S/ELS (L) 2/ELC.SUB
E SULFUR/CN
L5 1 S E3

FILE 'HCA' ENTERED AT 09:12:54 ON 18 JUL 2003
L6 24332 S (L5 OR SULFUR# OR SULPHUR# OR SULFER# OR SULPHER# OR S
L7 814 S L2
L8 499 S L3
L9 56486 S L4
L10 1 S L6 AND L7 AND L8 AND L9
L11 110738 S L5
L12 3 S L11 AND L7 AND L8 AND L9
L13 25 S L6 AND L7
L14 83 S L2/P
L15 3 S L13 AND L14
L16 7 S L13 AND (L8 OR L9)

FILE 'HCAPLUS' ENTERED AT 09:27:52 ON 18 JUL 2003
L17 4520 S RITCHIE ?/AU
L18 1415 S BOWLES ?/AU
L19 9 S L17 AND L18

FILE 'HCAPLUS' ENTERED AT 09:34:23 ON 18 JUL 2003
SEL
L19 4 RN

FILE 'REGISTRY' ENTERED AT 09:34:25 ON 18 JUL 2003
L20 5 S E1-E5
L21 5 S L20 AND L3

FILE 'HCA' ENTERED AT 09:38:50 ON 18 JUL 2003
L22 56 S L21/P
L23 1 S L22 AND L6
L24 759 S L9 AND L6
L25 147 S L3/P
L26 56 S L22 AND L25

L27 2 S L8 AND L6
 L28 1 S L25 AND L6
 L29 25 S L6 AND L7
 L30 2 S L6 AND L8
 L31 759 S L6 AND L9
 L32 7 S L29 AND L9
 L33 7 S L29 AND L31
 L34 11 S L10 OR L12 OR L16 OR L23 OR L27 OR L28 OR L32 OR L33

FILE 'REGISTRY' ENTERED AT 09:50:31 ON 18 JUL 2003

=> file hca

FILE 'HCA' ENTERED AT 09:50:52 ON 18 JUL 2003

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=> d l34 1-11 ibib abs hitstr hitind

L34 ANSWER 1 OF 11 HCA COPYRIGHT 2003 ACS

ACCESSION NUMBER: 134:59129 HCA

TITLE: Process for producing a lithium transition metal sulphide

INVENTOR(S): Ritchie, Andrew Grahame; Bowles, Peter George

PATENT ASSIGNEE(S): Secretary of State for Defence, UK

SOURCE: PCT Int. Appl., 9 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000078673	A1	20001228	WO 2000-GB2179	20000605
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
GB 2351075	A1	20001220	GB 1999-14041	19990617
GB 2365858	A1	20020227	GB 2001-28324	20000605
GB 2365858	B2	20021231		
EP 1187790	A1	20020320	EP 2000-937049	20000605
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2003502265	T2	20030121	JP 2001-504848	20000605

PRIORITY APPLN. INFO.:

GB 1999-14041 A 19990617

WO 2000-GB2179 W 20000605

AB A process for the prodn. of a lithium transition metal sulfide such as lithium iron sulfide, the process comprising reacting a transition metal sulfide with lithium sulfide in a solvent comprising molten sulfur. Lithium transition metal sulfides obtained using this process are also claimed and are useful in the prodn. of electrodes, in particular for rechargeable lithium batteries.

IT 12680-08-9P, Lithium titanium sulfide 37367-96-7P, Lithium molybdenum sulfide 59217-78-6P, Iron lithium sulfide (FeLi₂S₂) 79176-50-4P, Iron lithium sulfide (Fe₂Li₃S₄) 80341-49-7P, Iron lithium sulfide (process for producing lithium transition metal sulfide)

RN 12680-08-9 HCA

CN Lithium titanium sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
S	x	7704-34-9
Ti	x	7440-32-6
Li	x	7439-93-2

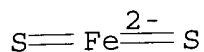
RN 37367-96-7 HCA

CN Lithium molybdenum sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
S	x	7704-34-9
Mo	x	7439-98-7
Li	x	7439-93-2

RN 59217-78-6 HCA

CN Ferrate(2-), dithioxo-, dilithium (9CI) (CA INDEX NAME)

2 Li⁺

RN 79176-50-4 HCA

CN Iron lithium sulfide (Fe₂Li₃S₄) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
S	4	7704-34-9

Li	3	7439-93-2
Fe	2	7439-89-6

RN 80341-49-7 HCA
 CN Iron lithium sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	x	7704-34-9
Li	x	7439-93-2
Fe	x	7439-89-6

IC ICM C01B017-22
 ICS H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 49

IT **12680-08-9P**, Lithium titanium sulfide **37367-96-7P**,
 Lithium molybdenum sulfide **59217-78-6P**, Iron lithium
 sulfide (FeLi₂S₂) **79176-50-4P**, Iron lithium sulfide
 (Fe₂Li₃S₄) **80341-49-7P**, Iron lithium sulfide
 (process for producing lithium transition metal sulfide)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L34 ANSWER 2 OF 11 HCA COPYRIGHT 2003 ACS

ACCESSION NUMBER:

TITLE:

124:150594 HCA

Process and catalysts for removing
sulfur compounds from **fluid**

streams, especially sour natural gas, to form
 sulfur

INVENTOR(S):

Gunning, Harry E.

PATENT ASSIGNEE(S):

Can.

SOURCE:

Can., 50 pp.

CODEN: CAXXA4

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CA 1337069	A1	19950919	CA 1989-614854	19890929
			CA 1989-614854	19890929

PRIORITY APPLN. INFO.:

AB The process comprises (1) contacting the gas at a temp. below the
 vaporization point of S with a supported catalyst comprising a mixt.
 of .gtoreq.2 salts, (a) a sulfide or selenide of .gtoreq.1 of
 amphoteric or polyvalent metals, (b) an alkali metal sulfide or
 selenide, and, immobilized within said support, .gtoreq.1 components
 capable of providing or generating reactive O capable of reacting
 with non-S component of the compd. to form S, (2) heating the

catalyst in the presence of a sweep gas to drive off elemental S as vapor, and (3) regenerating the catalyst with SO₂ or N peroxide. The natural gas is sweetened by providing a SO₂-contg. gas, exposing the gas to the catalyst to form S, and purging the catalyst from S with a sweep gas.

IT 11113-75-0, Nickel sulfide 11130-24-8, Vanadium sulfide 12136-58-2, Lithium sulfide 12612-50-9, Molybdenum sulfide 12687-82-0, Manganese sulfide (process and catalysts for removing **sulfur** compds. from **fluid** streams, esp. sour natural gas, to form sulfur)

RN 11113-75-0 HCA

CN Nickel sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
S	x	7704-34-9
Ni	x	7440-02-0

RN 11130-24-8 HCA

CN Vanadium sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
S	x	7704-34-9
V	x	7440-62-2

RN 12136-58-2 HCA

CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li-S-Li

RN 12612-50-9 HCA

CN Molybdenum sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
S	x	7704-34-9
Mo	x	7439-98-7

RN 12687-82-0 HCA

CN Manganese sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
S	x	7704-34-9
Mn	x	7439-96-5

- IC ICM C01B017-04
ICS B01D053-36
- CC 51-5 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 59
- IT Alkali metal sulfides
Selenides
Sulfides, uses
(process and catalysts for removing **sulfur** compds. from **fluid** streams, esp. sour natural gas, to form sulfur)
- IT Molecular sieves
(supports; process and catalysts for removing **sulfur** compds. from **fluid** streams, esp. sour natural gas, to form sulfur)
- IT Zeolites, uses
(supports; process and catalysts for removing **sulfur** compds. from **fluid** streams, esp. sour natural gas, to form sulfur)
- IT Alkali metal chalcogenides
(selenides, process and catalysts for removing **sulfur** compds. from **fluid** streams, esp. sour natural gas, to form sulfur)
- IT 7446-09-5, Sulfur dioxide, processes 10102-44-0, Nitrogen peroxide, processes
(oxygen source; process and catalysts for removing **sulfur** compds. from **fluid** streams, esp. sour natural gas, to form sulfur)
- IT 1302-81-4, Aluminum sulfide 1312-73-8, Potassium sulfide
1312-74-9, Potassium selenide 1313-82-2, Sodium sulfide, uses
1313-85-5, Sodium selenide 1314-98-3, Zinc sulfide, uses
11113-75-0, Nickel sulfide 11115-78-9, Copper sulfide
11126-12-8, Iron sulfide 11130-24-8, Vanadium sulfide
12136-58-2, Lithium sulfide 12214-16-3, Cesium sulfide
12612-50-9, Molybdenum sulfide 12653-56-4, Cobalt sulfide
12687-82-0, Manganese sulfide 12738-87-3, Tin sulfide
31052-43-4, Rubidium selenide 31052-46-7, Cesium selenide
74749-97-6, Lithium selenide 129208-45-3, Rubidium sulfide
(process and catalysts for removing **sulfur** compds. from **fluid** streams, esp. sour natural gas, to form sulfur)
- IT 7704-34-9P, Sulfur, preparation
(process and catalysts for removing **sulfur** compds. from **fluid** streams, esp. sour natural gas, to form sulfur)
- IT 7783-06-4, Hydrogen sulfide, processes
(process and catalysts for removing **sulfur** compds. from **fluid** streams, esp. sour natural gas, to form sulfur)
- IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
(supports; process and catalysts for removing **sulfur** compds. from **fluid** streams, esp. sour natural gas, to form sulfur)
- IT 74-82-8, Methane, uses 7727-37-9, Nitrogen, uses
(sweep gas; process and catalysts for removing **sulfur** compds. from **fluid** streams, esp. sour natural gas, to form sulfur)

L34 ANSWER 3 OF 11 HCA COPYRIGHT 2003 ACS

ACCESSION NUMBER:

116:64117 HCA

TITLE:

Copper distribution between ferrous
sulfide-alkaline or -alkaline earth metal
sulfide fluxes and carbon saturated iron melt
Wang, Chao; Nagasaka, Tetsuya; Hino, Mitsutaka;
Banya, Shiro

AUTHOR(S):

CORPORATE SOURCE:

Fac. Eng., Tohoku Univ., Sendai, 980, Japan

SOURCE:

ISIJ International (1991), 31(11), 1309-15

CODEN: IINTEY; ISSN: 0915-1559

DOCUMENT TYPE:

Journal

LANGUAGE:

English

AB Measurements were made to study the effect of the addn. of alk. or
alk. earth metal sulfide such as Li_2S , K_2S , MgS , CaS , SrS , or BaS to
FeS on the Cu distribution ratio between FeS flux and C-satd. liq.
Fe at 1673 K. Since the soly. of MgS and CaS in liq. FeS was
limited, no apparent effect of MgS or CaS on the Cu distribution
ratio was obsd. Similar to the effect of Na_2S studied in the
previous work, the addn. of Li_2S , K_2S , SrS , or BaS to FeS increased
the Cu distribution ratio. LCu , and LCu reached a max. value at
certain contents of these additives in each flux. The max. values
of LCu measured in each flux were 30, 20, 22, and 19 in FeS- $\text{LiS}_{0.5}$,
- $\text{KS}_{0.5}$, - SrS , and - BaS fluxes, resp. The S content in
liq. Fe also decreased by the addn. of these sulfides to
FeS.

IT 1317-37-9, Iron sulfide (FeS)

(flux contg. alk. and alk. earth metal sulfides and, copper
distribution between carbon-satd. iron melt and)

RN 1317-37-9 HCA

CN Iron sulfide (FeS) (8CI, 9CI) (CA INDEX NAME)

$\text{Fe} \text{---} \text{S}$

IT 12136-58-2, Lithium sulfide (Li_2S)

(flux contg. iron sulfide and, copper distribution between
carbon-satd. iron melt and)

RN 12136-58-2 HCA

CN Lithium sulfide (Li_2S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

$\text{Li} \text{---} \text{S} \text{---} \text{Li}$

IT 22205-45-4, Copper sulfide (Cu_2S)

(in iron sulfide-lithium sulfide flux, carbon-satd. iron melt
copper distribution in relation to)

RN 22205-45-4 HCA

CN Copper sulfide (Cu_2S) (8CI, 9CI) (CA INDEX NAME)

$\text{Cu} \text{---} \text{S} \text{---} \text{Cu}$

CC 55-1 (Ferrous Metals and Alloys)
IT 1317-37-9, Iron sulfide (FeS)
(flux contg. alk. and alk. earth metal sulfides and, copper
distribution between carbon-satd. iron melt and)
IT 1312-73-8, Potassium sulfide (K₂S) 1314-96-1, Strontium sulfide
(SrS) 12032-36-9, Magnesium sulfide (MgS) 12136-58-2,
Lithium sulfide (Li₂S) 20548-54-3, Calcium sulfide (CaS)
21109-95-5, Barium sulfide (BaS)
(flux contg. iron sulfide and, copper distribution between
carbon-satd. iron melt and)
IT 22205-45-4, Copper sulfide (Cu₂S)
(in iron sulfide-lithium sulfide flux, carbon-satd. iron melt
copper distribution in relation to)

L34 ANSWER 4 OF 11 HCA COPYRIGHT 2003 ACS

ACCESSION NUMBER: 115:33005 HCA

TITLE: Effect of alkaline and alkaline earth metal
sulfide addition on the copper distribution
between ferrous sulfide flux and carbon
saturated liquid iron

AUTHOR(S): Wang, Chao; Nagasaka, Tetsuya; Hino, Mitsutaka;
Banya, Shiro

CORPORATE SOURCE: Res. Inst. Miner. Dress. Metall., Tohoku Univ.,
Sendai, Japan

SOURCE: Tetsu to Hagane (1991), 77(5), 644-51
CODEN: TEHAA2; ISSN: 0021-1575

DOCUMENT TYPE: Journal

LANGUAGE: Japanese

AB The effect of adding alk. or alk. earth metal sulfide such as Li₂S,
K₂S, MgS, CaS, SrS, or BaS to FeS flux on the Cu distribution ratio
between FeS flux and C-satd. liq. Fe at 1 673 K was studied. Since
the soly. of MgS and CaS in liq. FeS was limited, no apparent effect
of MgS or CaS on the Cu distribution ratio was obsd. Similar to the
effect of Na₂S, the addn. of Li₂S, K₂S, SrS, or BaS to FeS increased
the Cu distribution ratio, which reached a max. value at certain
content of these additives in each flux. The max. values of
distribution ratio measured in each flux were 30, 20, 22, and 19 in
FeS-Li₂S0.5, -KS0.5, -SrS, and -BaS fluxes, resp. The S
content in liq. Fe also decreased by adding the sulfides
to FeS.

IT 1317-37-9, Iron sulfide (FeS)
(fluxes, copper distribution between carbon-satd. liq. iron and,
effect of adding alk. and alk. earth metal sulfides on)

RN 1317-37-9 HCA

CN Iron sulfide (FeS) (8CI, 9CI) (CA INDEX NAME)

Fe=S

IT 12136-58-2, Lithium sulfide (Li₂S)
(in iron sulfide flux, copper distribution between carbon-satd.

liq. iron and flux in relation to)
RN 12136-58-2 HCA
CN Lithium sulfide (Li2S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li-S-Li

CC 55-1 (Ferrous Metals and Alloys)
IT 1317-37-9, Iron sulfide (FeS)
(fluxes, copper distribution between carbon-satd. liq. iron and,
effect of adding alk. and alk. earth metal sulfides on)
IT 1312-73-8, Potassium sulfide (K2S) 1314-96-1, Strontium sulfide
(SrS) 12136-58-2, Lithium sulfide (Li2S) 21109-95-5,
Barium sulfide (BaS)
(in iron sulfide flux, copper distribution between carbon-satd.
liq. iron and flux in relation to)

L34 ANSWER 5 OF 11 HCA COPYRIGHT 2003 ACS

ACCESSION NUMBER: 107:220469 HCA

TITLE: Multicomponent phase diagrams for battery
applications. II. Oxygen impurities in the
lithium(silicon)/iron sulfide (FeS2) battery
cathode

AUTHOR(S): Aselage, T. L.; Hellstrom, E. E.
CORPORATE SOURCE: Sandia Natl. Lab., Albuquerque, NM, 87185, USA
SOURCE: Journal of the Electrochemical Society (1987),
134(8A), 1932-8
CODEN: JESOAN; ISSN: 0013-4651

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The effects of Fe2O3, FeSO4, and Fe2(SO)43 impurities in the FeS2
cathode on the voltage response of the Li(Si)/FeS2 thermal battery
were studied. Calcns. were made of the pertinent equil. phase
relations in the Li-Fe-S-O system at 400.degree. and of the voltage
of each of the 4-phase regions vs. a Li(Si) anode (44% Li). The
calcns. showed that these impurities in the FeS2 cathode can all
cause voltages that are higher than the steady-state voltage of the
battery. The study showed that equilibrating FeS2 cathode materials
that contains O impurities with a small amt. of a compd. contg. Li
shifts the overall cathode compn. into one of three 4-phase regions
that exhibit the steady-state battery voltage.

IT 12068-85-8, Iron sulfide (FeS2)
(cathodes, performance of, oxygen impurity effect on,
lithium-iron-sulfur-oxygen phase diagram in relation to, for
lithium-silicon alloy thermal batteries)

RN 12068-85-8 HCA

CN Iron sulfide (FeS2) (8CI, 9CI) (CA INDEX NAME)

S=Fe=S

IT 12136-58-2P, Lithium sulfide 79176-50-4P

(formation of, in discharge of lithium-silicon alloy iron sulfide battery, oxygen impurities in cathode in relation to)

RN 12136-58-2 HCA
CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li-S-Li

RN 79176-50-4 HCA
CN Iron lithium sulfide (Fe₂Li₃S₄) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
S	4	7704-34-9
Li	3	7439-93-2
Fe	2	7439-89-6

IT 7704-34-9, Sulfur, properties
(systems, iron-lithium-oxygen-, phase diagram of, cathode impurity in lithium-silicon alloy-iron sulfide thermal battery in relation to)

RN 7704-34-9 HCA
CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 68

IT 12068-85-8, Iron sulfide (FeS₂)
(cathodes, performance of, oxygen impurity effect on, lithium-iron-sulfur-oxygen phase diagram in relation to, for lithium-silicon alloy thermal batteries)

IT 10377-48-7P, Lithium sulfate 12023-70-0P 12136-58-2P,
Lithium sulfide 79176-50-4P
(formation of, in discharge of lithium-silicon alloy iron sulfide battery, oxygen impurities in cathode in relation to)

IT 7704-34-9, Sulfur, properties
(systems, iron-lithium-oxygen-, phase diagram of, cathode impurity in lithium-silicon alloy-iron sulfide thermal battery in relation to)

L34 ANSWER 6 OF 11 HCA COPYRIGHT 2003 ACS

ACCESSION NUMBER:

TITLE:

AUTHOR(S):

CORPORATE SOURCE:

SOURCE:

107:163862 HCA

Mathematical modeling of lithium(alloy), iron disulfide cells

Bernardi, Dawn; Newman, John

Mater. Mol. Res. Div., Lawrence Berkeley Lab., Berkeley, CA, 94720, USA

Journal of the Electrochemical Society (1987), 134(6), 1309-18

CODEN: JESOAN; ISSN: 0013-4651

DOCUMENT TYPE:

Journal

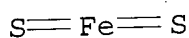
LANGUAGE:

English

AB Results obtained from computer programs simulating the behavior of LiAl/FeS₂ and Li(Si)/FeS₂ high-temp. cells employing LiCl-KCl electrolyte are presented. The thermodyn., open-circuit potential of these cells as a function of state-of-discharge and neg.-to-pos. capacity ratio was investigated. A nonequil. cell model gives the effects of state-of-discharge, initial electrolyte compn., temp., and discharge c.d. on cell voltage. Reaction rate distributions are discussed. The model predicts that KCl pptn. can limit the utilization of the FeS₂ electrode, usually on the lowest voltage plateau. The calcd. cell discharge behavior is compared with available exptl. data.

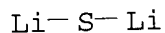
IT 12068-85-8, Iron sulfide(FeS₂)
(electrode, in cell with lithium alloy, math. modeling of)

RN 12068-85-8 HCA

CN Iron sulfide (FeS₂) (8CI, 9CI) (CA INDEX NAME)

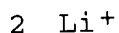
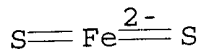
IT 12136-58-2, Lithium sulfide (Li₂S) 59217-78-6,
Iron lithium sulfide (FeLi₂S₂) 79176-50-4, Iron lithium
sulfide (Fe₂Li₃S₄) 110641-97-9, Iron lithium sulfide
(Fe_{0.67}Li_{2.33}S₂) 110642-09-6
(molar volume of, in iron disulfide electrode in cell with
lithium alloy)

RN 12136-58-2 HCA

CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

RN 59217-78-6 HCA

CN Ferrate(2-), dithioxo-, dilithium (9CI) (CA INDEX NAME)



RN 79176-50-4 HCA

CN Iron lithium sulfide (Fe₂Li₃S₄) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9

Li	3	7439-93-2
Fe	2	7439-89-6

RN 110641-97-9 HCA
 CN Iron lithium sulfide (Fe_{0.67}Li_{2.33}S₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	2	7704-34-9
Li	2.33	7439-93-2
Fe	0.67	7439-89-6

RN 110642-09-6 HCA
 CN Iron sulfide (Fe_{0.88}S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Fe	0.88	7439-89-6

IT 7704-34-9, Sulfur, properties
 (systems, iron-lithium-)
 RN 7704-34-9 HCA
 CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

CC 72-2 (Electrochemistry)
 Section cross-reference(s): 52, 68
 IT 12068-85-8, Iron sulfide(FeS₂)
 (electrode, in cell with lithium alloy, math. modeling of)
 IT 12136-58-2, Lithium sulfide (Li₂S) 59217-78-6,
 Iron lithium sulfide (FeLi₂S₂) 79176-50-4, Iron lithium
 sulfide (Fe₂Li₃S₄) 110641-97-9, Iron lithium sulfide
 (Fe_{0.67}Li_{2.33}S₂) 110642-09-6
 (molar volume of, in iron disulfide electrode in cell with
 lithium alloy)
 IT 7704-34-9, Sulfur, properties
 (systems, iron-lithium-)

L34 ANSWER 7 OF 11 HCA COPYRIGHT 2003 ACS

ACCESSION NUMBER: 102:196690 HCA

TITLE: Structure and superconductivity in
 lithium-intercalated niobium dichalcogenides
 AUTHOR(S): McEwen, C. S.; St. Julien, D. J.; Edwards, P.
 P.; Sienko, M. J.
 CORPORATE SOURCE: Baker Lab. Chem., Cornell Univ., Ithaca, NY,
 14853, USA
 SOURCE: Inorganic Chemistry (1985), 24(11), 1656-60

CODEN: INOCAJ; ISSN: 0020-1669

DOCUMENT TYPE:

Journal

LANGUAGE:

English

AB Li_xNbS_2 ($0 \leq x \leq 0.50$) and Li_xNbSe_2 ($0 \leq x \leq 0.67$) were prepd. by high-temp. reaction of Li_2X ($\text{X} = \text{S}, \text{Se}$), Nb, and X. Structures were detd. by anal. of x-ray powder patterns with polytypism obsd. in the sulfide series. Staging and Li ordering is obsd., and crystal parameters are proposed for a 2nd staged sample, $\text{Li}_{0.2}\text{NbSe}_2$. In the series Li_xNbSe_2 , Tc exhibits a monotonic decrease with increasing Li content, falling to < 2 K by $x = 0.25$. In contrast, in the Li_xNbS_2 series, Tc exhibits a more complicated pattern with Tc plummeting to < 2 K by $x = 0.05$, only to rebound to 3.7 K at $x = 0.33$ and then fall to < 2 K at $x = 0.4$.

IT 55964-37-9P 56321-19-8P

(prepn., crystal structure and supercond. of)

RN 55964-37-9 HCA

CN Niobate(1-), dithioxo-, lithium (9CI) (CA INDEX NAME)

 Li^+

RN 56321-19-8 HCA

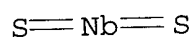
CN Lithium niobium sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	x	7704-34-9
Nb	x	7440-03-1
Li	x	7439-93-2

IT 12136-97-9

(reaction of, with butyllithium)

RN 12136-97-9 HCA

CN Niobium sulfide (NbS_2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

IT 7704-34-9, reactions

(reactions of, with niobium and lithium sulfide)

RN 7704-34-9 HCA

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IT 12136-58-2
(reactions of, with niobium and sulfur)
RN 12136-58-2 HCA
CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li-S-Li

CC 78-3 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 75, 76
IT 55964-36-8P 55964-37-9P 56321-19-8P
61673-65-2P
(prepn., crystal structure and supercond. of)
IT 12034-77-4 12136-97-9
(reaction of, with butyllithium)
IT 7704-34-9, reactions
(reactions of, with niobium and lithium sulfide)
IT 12136-58-2
(reactions of, with niobium and sulfur)

✓ L34 ANSWER 8 OF 11 HCA COPYRIGHT 2003 ACS

ACCESSION NUMBER:

TITLE:

AUTHOR(S):

CORPORATE SOURCE:

SOURCE:

DOCUMENT TYPE:

LANGUAGE:

AB With regard to the use of different metals as current collectors for a S electrode, the effect was studied melts, LiCl-KCl-S current collector material in processes occurring at such an electrode. Polarization curves were plotted under potentiodynamic and pulsed galvanostatic conditions on electrodes of Ni, Fe, and Cu in LiCl-KCl melts. LiCl-KCl-S melts and on a S cathode, the current collector of which was prepd. from the above metals, at 673 K. The values of the std. potentials of alk. metal deposition (Li and K) on sulfides of Ni, Fe and Cu (at 673 K), calcd. on the basis of thermodyn. data, allow one to propose that on the surfaces of metals immersed in LiCl-KCl-S melts, there are formed S-depleted sulfides (Ni₃S₂, FeS, Cu₂S) and, during simultaneous contact with S and the electrolyte, a whole series of sulfides with which Li, being deposited on the cathode, interacts.

IT 1317-37-9P
(formation of, electrolytic polarization of iron in chloride melt contg. sulfur in relation to)

RN 1317-37-9 HCA

CN Iron sulfide (FeS) (8CI, 9CI) (CA INDEX NAME)

Fe=S

IT 12035-72-2P
(formation of, electrolytic polarization of nickel and chloride
melt contg. sulfur in relation to)

RN 12035-72-2 HCA
CN Nickel sulfide (Ni3S2) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 22205-45-4P
(formation of, in electrolytic polymn. copper in chloride
melt contg. sulfur in relation to)

RN 22205-45-4 HCA
CN Copper sulfide (Cu2S) (8CI, 9CI) (CA INDEX NAME)

Cu-S-Cu

IT 12136-58-2P
(formation of, on current collectors in chloride melts
contg. sulfur)

RN 12136-58-2 HCA
CN Lithium sulfide (Li2S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li-S-Li

IT 1317-40-4 12035-51-7 12068-85-8
16812-54-7
(reaction of, with lithium and potassium, elec. potential of)

RN 1317-40-4 HCA
CN Copper sulfide (CuS) (8CI, 9CI) (CA INDEX NAME)

Cu=S

RN 12035-51-7 HCA
CN Nickel sulfide (NiS2) (6CI, 8CI, 9CI) (CA INDEX NAME)

S=Ni=S

RN 12068-85-8 HCA
CN Iron sulfide (FeS2) (8CI, 9CI) (CA INDEX NAME)

S=Fe=S

RN 16812-54-7 HCA
CN Nickel sulfide (NiS) (8CI, 9CI) (CA INDEX NAME)

Ni=S

- CC 72-5 (Electrochemistry)
 Section cross-reference(s): 68
- ST nickel electrochem polarization chloride melt; iron electrochem polarization chloride melt; copper electrochem polarization chloride; **sulfur** chloride melt metal polarization; electrolytic polarization metal sulfur chloride
- IT 1317-37-9P
 (formation of, electrolytic polarization of iron in chloride melt contg. **sulfur** in relation to)
- IT 12035-72-2P
 (formation of, electrolytic polarization of nickel and chloride melt contg. **sulfur** in relation to)
- IT 22205-45-4P
 (formation of, in electrolytic polymn. copper in chloride melt contg. **sulfur** in relation to)
- IT 1312-73-8P 12136-58-2P
 (formation of, on current collectors in chloride melts contg. **sulfur**)
- IT 1317-40-4 12035-51-7 12068-85-8
 16812-54-7
 (reaction of, with lithium and potassium, elec. potential of)

L34 ANSWER 9 OF 11 HCA COPYRIGHT 2003 ACS

ACCESSION NUMBER:

97:46407 HCA

TITLE:

~~Electrochemical behavior of iron in the presence of sulfide ions dissolved in molten lithium chloride-potassium chloride eutectic at 450.degree.C~~

AUTHOR(S):

Santarini, G.

CORPORATE SOURCE:

CEA, Fontenay-aux-Roses, 92260, Fr.

SOURCE:

Electrochimica Acta (1982), 27(4), 495-510
 CODEN: ELCAAV; ISSN: 0013-4686

DOCUMENT TYPE:

Journal

LANGUAGE:

English

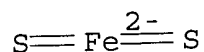
AB From electrochem. expts. and from thermodyn. considerations, a potential-pS₂- diagram is proposed for solid species relative to the Fe-S system in the presence of molten LiCl-KCl eutectic at 450.degree.. On the basis of this study, the following values may be adopted: Gibbs free energy of formation of the Li₂FeS₂ phase (from Li₂S and FeS): -0.7 kcal; Gibbs free energy of formation of the Li₆Fe₂₄S₂₆Cl phase (from FeS, Li₂S, and the LiCl-KCl eutectic): 16 kcal; soly. product of FeS: 1.5 .times. 10⁻¹² (in the molar fraction scale); and soly. of Li₂S: 5.28 .times. 10⁻⁴ (molar fraction). The exptl. results point to the existence in soln. of species other than Fe²⁺ and S₂⁻.

IT 59217-78-6

(free energy of formation of)

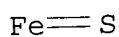
RN 59217-78-6 HCA

CN Ferrate(2-), dithioxo-, dilithium (9CI) (CA INDEX NAME)

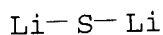


2 Li⁺

IT 1317-37-9 12136-58-2
(soly. of, in lithium chloride-potassium chloride eutectic melt)
RN 1317-37-9 HCA
CN Iron sulfide (FeS) (8CI, 9CI) (CA INDEX NAME)



RN 12136-58-2 HCA
CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



CC 72-2 (Electrochemistry)
Section cross-reference(s): 68, 69
IT Electric potential
(-sulfide ion concn. diagram, for iron-sulfur system in
molten chloride eutectic)
IT 59217-78-6 64616-08-6
(free energy of formation of)
IT 1317-37-9 12136-58-2
(soly. of, in lithium chloride-potassium chloride eutectic melt)

L34 ANSWER 10 OF 11 HCA COPYRIGHT 2003 ACS

ACCESSION NUMBER:

TITLE:

91:98995 HCA

Anodic corrosion rate measurements in lithium
chloride-potassium chloride eutectic. II.
Results on nickel, molybdenum, and stainless
steel

AUTHOR(S):

CORPORATE SOURCE:

Raleigh, D. O.; White, J. T.; Ogden, C. A.
Sci. Cent., Rockwell Int., Thousand Oaks, CA,
91360, USA

SOURCE:

Journal of the Electrochemical Society (1979),
126(7), 1093-9
CODEN: JESQAN; ISSN: 0013-4651

DOCUMENT TYPE:

LANGUAGE:

Journal
English

AB The anodic dissoln. characteristics of Ni, Mo, and AISI304 were
examd. in pure and Li₂S-satd. LiCl-KCl eutectic melt. Mo and Ni
show Tafel-type dissoln. kinetics in pure eutectic which permit
ests. of long-term corrosion rates as a function of voltage. Ni

exhibits a sharp threshold potential for dissoln. in Li₂S-satd. melt, forming a nonpassivating Ni₃S₂ layer. Comparative voltammetry and open-circuit potential measurements with Fe in this melt suggest that care may be required in using Ni as an Fe sulfide current collector. The anodic dissoln. of 304 stainless steel in Li₂S-satd. melt appears to be rate limited by diffusion through a reaction layer, showing a (time)^{-1/2} dependence that may be applicable to long-term corrosion predictions. Mo appears to owe its excellent anodic corrosion resistance in Li₂-S-satd. melt both to a chem. formed prepassive film and to a well-defined anodic passivation process. Anodic corrosion of metals should, in general, occur more readily in the Li₂S-satd. melt than in pure LiCl-KCl for straight-forward thermodyn. reasons.

IT 12035-72-2P
(formation of, on nickel during anodic soln. in chloride melts satd. with lithium sulfide)

RN 12035-72-2 HCA

CN Nickel sulfide (Ni₃S₂) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 12136-58-2
(molybdenum and nickel and stainless steel anodic dissoln. in lithium chloride-potassium chloride satd. with)

RN 12136-58-2 HCA

CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li-S-Li

CC 72-4 (Electrochemistry)

IT 12035-72-2P
(formation of, on nickel during anodic soln. in chloride melts satd. with lithium sulfide)

IT 12136-58-2
(molybdenum and nickel and stainless steel anodic dissoln. in lithium chloride-potassium chloride satd. with)

L34 ANSWER 11 OF 11 HCA COPYRIGHT 2003 ACS

ACCESSION NUMBER: 78:51696 HCA

TITLE: Electrochemical generation and measurement of sulfide ion in molten lithium chloride-potassium chloride eutectic

AUTHOR(S): Liu, C. H.; Zielen, A. J.; Gruen, D. M.
CORPORATE SOURCE: Chem. Div., Argonne Natl. Lab., Argonne, IL, USA
SOURCE: Journal of the Electrochemical Society (1973), 120(1), 67-70

CODEN: JESOAN; ISSN: 0013-4651

DOCUMENT TYPE: Journal

LANGUAGE: English

AB An electrode composed of the eutectic mixt. of NiS and Ni (1:1 mole ratio) is useful for coulometrically generating S₂- in molten LiCl-KCl eutectic. A shiny Ni electrode coated with NiS functions reversibly as an electrode of the 2nd kind for S₂-.

With this indicator electrode, the soly. product of NiS at 375-475.degree. was detd., and the heat of reaction for the soly. equil. NiS(s) \rightarrow Ni(II) + S²⁻ was calcd. The soly. behavior of Li₂S in the same temp. range was also investigated

IT 12136-58-2 16812-54-7
(soly. of, in fused lithium chloride-potassium chloride eutectic)
RN 12136-58-2 HCA
CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li-S-Li

RN 16812-54-7 HCA
CN Nickel sulfide (NiS) (8CI, 9CI) (CA INDEX NAME)

Ni=S

CC 77-9 (Electrochemistry)
Section cross-reference(s): 68, 79
IT 12136-58-2 16812-54-7
(soly. of, in fused lithium chloride-potassium chloride eutectic)

=> d his l35-

FILE 'HCA' ENTERED AT 09:50:52 ON 18 JUL 2003
L35 9419 S L5 (L) RCT/RL
L36 6 S L25 AND L35
L37 QUE MELT? OR MOLTEN? OR FUSE# OR FUSING# OR FUSION?
L38 0 S L36 AND L37
L39 5 S L36 NOT L34

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L39 ANSWER 1 OF 5 HCA COPYRIGHT 2003 ACS

134:289374 Syntheses and Structures of LiAuS and Li₃AuS₂. Huang, Fu Qiang; Yang, Yuting; Flaschenriem, Christine; Ibers, James A. (Department of Chemistry, Northwestern University, Evanston, IL, 60208-3113, USA). Inorganic Chemistry, 40(6), 1397-1398 (English) 2001. CODEN: INOCAJ. ISSN: 0020-1669. Publisher: American Chemical Society.

AB The compds. LiAuS and Li₃AuS₂ were prepd. in a Li₂S reactive flux. The cor. crystal structure of LiAuS is reported as well as the crystal structure of Li₃AuS₂. For LiAuS: space group Fddd, a 8.9252(15), b 8.9686(15), c 11.2062(19) .ANG., Z = 16. For Li₃AuS₂: space group Ibam, a 5.763(1), b 11.281(2), c 6.276(1) .ANG., Z = 4. In both structures, short interactions exist between linear two-coordinated Au⁺ cations.

IT 7704-34-9, Sulfur, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)

(for prepn. of lithium gold sulfides LiAuS and Li₃AuS₂ by reactive flux technique)

RN 7704-34-9 HCA
CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IT 214918-22-6P, Gold lithium sulfide (AuLiS)
RL: PRP (Properties); ~~SPN (Synthetic preparation)~~; PREP
(Preparation)
(prepn. by reactive flux technique and cor. crystal structure of)
RN 214918-22-6 HCA
CN Lithium gold sulfide (AuLiS) (9CI) (CA INDEX NAME)

Au-S-Li

IT 333392-85-1P, Gold lithium sulfide (AuLi₃S₂)
RL: PRP (Properties); SPN (Synthetic preparation); PREP
(Preparation)
(prepn. by reactive flux technique and crystal structure of)
RN 333392-85-1 HCA
CN Gold lithium sulfide (AuLi₃S₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	2	7704-34-9
Au	1	7440-57-5
Li	3	7439-93-2

CC 78-5 (Inorganic Chemicals and Reactions)

Section cross-reference(s): 75

IT 7439-93-2, Lithium, reactions 7440-57-5, Gold, reactions

7704-34-9, Sulfur, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(for prepn. of lithium gold sulfides LiAuS and Li₃AuS₂ by reactive flux technique)

IT 214918-22-6P, Gold lithium sulfide (AuLiS)

RL: PRP (Properties); SPN (Synthetic preparation); PREP

(Preparation)

(prepn. by reactive flux technique and cor. crystal structure of)

IT 333392-85-1P, Gold lithium sulfide (AuLi₃S₂)

RL: PRP (Properties); SPN (Synthetic preparation); PREP

(Preparation)

(prepn. by reactive flux technique and crystal structure of)

L39 ANSWER 2 OF 5 HCA COPYRIGHT 2003 ACS

129:325222 Flux Synthesis of LiAuS and NaAuS: "Chicken-Wire-Like" Layer Formation by Interweaving of (AuS)_{nn}- Threads. Comparison with .alpha.-HgS and AAuS (A = K, Rb). Axtell, Enos A., III; Liao,

X

Ju-Hsiou; Kanatzidis, Mercouri G. (Department of Chemistry and Center for Fundamental Materials Research, Michigan State University, East Lansing, MI, 48824-1322, USA). Inorganic Chemistry, 37(21), 5583-5587 (English) 1998. CODEN: INOCAJ. ISSN: 0020-1669. Publisher: American Chemical Society.

- AB From the reaction of Au with alkali metal polysulfide liqs., LiAuS and NaAuS were discovered. Orange crystals of LiAuS crystallize in the monoclinic space group C2/c, with a 8.994(2), b 8.956(2), c 7.201(3) .ANG., .beta. 128.68(1).degree., and Z = 8. Light-yellow planks of NaAuS crystallize in the orthorhombic space group Ccca, with a 14.658(5), b 21.043(7), c 7.118(4) .ANG., and Z = 32. Both compds. contain infinite 1-dimensional (AuS)_{nn}- chains, featuring alternating sulfide anions and linear coordinated Au centers. In LiAuS, the chains are zigzag and fully extended and they pack in two mutually perpendicular sets. In NaAuS, the same chains coil in an unusual fashion so that they become interwoven to form layers reminiscent of chicken-wire. This novel coiling mode allows Au-Au contacts to form, which help to stabilize the structure. The structural relations between LiAuS, NaAuS, Na₇Au₅S₆, AAuQ (A = K, Rb, Cs; Q = S, Se), and .alpha.-HgS are explored.
- IT **214918-22-6P**, Lithium gold sulfide (AuLiS)
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(flux prepn. and crystal structure)
- RN 214918-22-6 HCA
CN Lithium gold sulfide (AuLiS) (9CI) (CA INDEX NAME)

Au-S-Li

- IT **7704-34-9**, Sulfur, reactions
RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(for flux prepn. of lithium gold sulfide (LiAuS) and sodium gold sulfide (NaAuS))
- RN 7704-34-9 HCA
CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

- CC 78-6 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 75
- IT **214918-22-6P**, Lithium gold sulfide (AuLiS) 214918-23-7P,
Gold sodium sulfide (AuNaS)
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(flux prepn. and crystal structure)
- IT 7440-57-5, Gold, reactions **7704-34-9**, Sulfur, reactions
RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(for flux prepn. of lithium gold sulfide (LiAuS) and sodium gold sulfide (NaAuS))

L39 ANSWER 3 OF 5 HCA COPYRIGHT 2003 ACS

109:46902 Electric conductor from an inorganic polymeric compound containing a transition metal and its preparation. Nakamura, Akira; Tatsumi, Kazuyuki (Idemitsu Petrochemical Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 62260860 A2 19871113 Showa, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-103194 19860507.

AB The title compd. is comprises MSaCbHc (M = Nb, Zn, V, Ta, or Ti; a = 2-4; b = 0-0.2; and c = 0-5). A method for prepg. the compd. involves thermal decompn. of A(MxSy) (M = Nb, Zr, V, Ta, or Ti; A = Li, tetraphenylphosphonium, tetraphenylarsonium, or tetraalkylammonium; and x, y = pos. no). The method is simple and preps. the title compd. having a desired elec. cond. A compd. having a cond. of 1 (.OMEGA.-cm)⁻¹ and prepd. by thermal decompn. of Li(Nb₃S₁₂) prepd. from Li₂S₅ and NbCl₅.

IT 51680-57-0P 61673-68-5P 74245-06-0P
114105-13-4P, Lithium niobium polysulfide (Li(Nb₃S₁₂))
RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and thermal decompn. of)

RN 51680-57-0 HCA

CN Lithium zirconium sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	x	7704-34-9
Zr	x	7440-67-7
Li	x	7439-93-2

RN 61673-68-5 HCA

CN Lithium tantalum sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	x	7704-34-9
Ta	x	7440-25-7
Li	x	7439-93-2

RN 74245-06-0 HCA

CN Lithium vanadium sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	x	7704-34-9
V	x	7440-62-2
Li	x	7439-93-2

RN 114105-13-4 HCA

CN Lithium niobium sulfide (LiNb₃S₁₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component
-----------	-------	-----------

		Registry Number
=====+=====+=====		
S	12	7704-34-9
Nb	3	7440-03-1
Li	1	7439-93-2

IT 7704-34-9, Sulfur, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with lithium, in prepn. of polysulfides)
 RN 7704-34-9 HCA
 CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IC ICM C08L101-00
 ICS C08G079-06
 CC 76-2 (Electric Phenomena)
 Section cross-reference(s): 37
 IT 18198-39-5P 51680-57-0P 61673-68-5P
 74245-06-0P 114105-13-4P, Lithium niobium
 polysulfide (Li(Nb₃S₁₂))
 RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (prepn. and thermal decompn. of)
 IT 7704-34-9, Sulfur, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with lithium, in prepn. of polysulfides)

L39 ANSWER 4 OF 5 HCA COPYRIGHT 2003 ACS

107:210860 Synthesis, order-disorder transition and magnetic properties
 of LiLnS₂, LiLnSe₂, NaLnS₂ and NaLnSe₂ (Ln = lanthanides). Ohtani,
 Tsukio; Honjo, Hideaki; Wada, Hironobu (Lab. Solid State Chem.,
 Okayama Univ. Sci., Okayama, 700, Japan). Materials Research
 Bulletin, 22(6), 829-40 (English) 1987. CODEN: MRBUAC. ISSN:
 0025-5408.

AB LiLnS₂, LiLnSe₂, NaLnS₂, and NaLnSe₂ (Ln = La, Ce, Nd, Sm, Gd, Tb,
 Dy, Ho, Er, or Y) were prepd. by heating mixts. of elements.
 Measurements showed 1st order transitions >600.degree. in LiLnS₂ (Ln
 = Dy, Ho, Er, Y), LiLnSe₂ (Ln = Gd-Er), NaNdS₂, and NaCeSe₂, which
 are considered order-disorder transitions between a NaCl and an
 .alpha.-NaFeO₂ structure. This is consistent with x-ray diffraction
 measurements. Magnetic susceptibility measurements revealed that
 all the lanthanides ions are trivalent.

IT 110657-06-2P, Lanthanum lithium disulfide
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (prepn. and crystal structure type of)

RN 110657-06-2 HCA
 CN Lanthanum lithium sulfide (LaLiS₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		

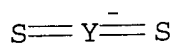
S		2		7704-34-9
Li		1		7439-93-2
La		1		7439-91-0

IT 12162-98-0P

RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn., crystal structure, magnetic susceptibility and
order-disorder transition of)

RN 12162-98-0 HCA

CN Yttrate(1-), dithioxo-, lithium (9CI) (CA INDEX NAME)

Li⁺

IT 7704-34-9, Sulfur, reactions

RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(thermal reactions of, with rare earth and lithium or sodium)

RN 7704-34-9 HCA

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

CC 78-7 (Inorganic Chemicals and Reactions)

IT 110657-06-2P, Lanthanum lithium disulfide 110657-07-3P,
Cerium lithium disulfide 110657-08-4P, Lanthanum lithium
diselenide 110657-09-5P, Cerium lithium diselenide
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and crystal structure type of)

IT 12159-26-1P, Dysprosium lithium disulfide 12159-50-1P, Erbium
lithium disulfide 12162-98-0P 37240-64-5P
110657-02-8P, Lithium terbium diselenide 110657-03-9P, Lithium
yttrium diselenide 110657-04-0P, Dysprosium lithium diselenide
110681-18-0P, Gadolinium lithium diselenide 111200-80-7P, Holmium
lithium diselenide

RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn., crystal structure, magnetic susceptibility and
order-disorder transition of)

IT 7704-34-9, Sulfur, reactions 7782-49-2, Selenium,
reactions

RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(thermal reactions of, with rare earth and lithium or sodium)

L39 ANSWER 5 OF 5 HCA COPYRIGHT 2003 ACS

105:201914 On several new ternary molybdenum sulfide phases M3.4Mo15S19
(M = vacancy, lithium, sodium, potassium, zinc, cadmium, tin and
thallium). Tarascon, J. M.; Hull, G. W. (Bell Commun. Res., Inc.,

Murray Hill, NJ, 07974, USA). Materials Research Bulletin, 21(7), 859-69 (English) 1986. CODEN: MRBUAC. ISSN: 0025-5408.

AB In_{3.4}Mo₁₅S₁₉ (I) was prepd. and is isostructural with In_{3.3}Mo₁₅Se₁₉. The In atoms were removed from I by oxidn. with HCl without disturbing the Mo chalcogenide network, resulting in Mo₁₅S₁₉. Furthermore, this phase, with an open framework structure turns out to be an interesting system for intercalation studies. Mo₁₅S₁₉ can undergo topotactic redox reactions with Li or Na, resulting in ~~Li₈Mo₁₅S₁₉ and Na₈Mo₁₅S₁₉~~, resp. These two phases are stable at room temp. in the absence of air. ~~MxMo₁₅S₁₉~~ (M = Zn, Cd, Sn and Tl) were also prepd. at low temps. by diffusion of M into the Mo₁₅S₁₉ matrix. These phases are stable at room temp. in air. None of the above materials exhibit supercond. .gtoreq.0.5 K.

IT 105109-95-3P

RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of)

RN 105109-95-3 HCA

CN Lithium molybdenum sulfide (Li₈Mo₁₅S₁₉) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	19	7704-34-9
Mo	15	7439-98-7
Li	8	7439-93-2

IT 7704-34-9, reactions

RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(reaction of, with indium sulfide and hydrogen-reduced
molybdenum)

RN 7704-34-9 HCA

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

CC 78-6 (Inorganic Chemicals and Reactions)

Section cross-reference(s): 72, 75

IT 57485-07-1P 105109-64-6P 105109-78-2P 105109-79-3P

105109-95-3P 105109-96-4P

RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of)

IT 7704-34-9, reactions

RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(reaction of, with indium sulfide and hydrogen-reduced
molybdenum)